

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

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|---|---|----|---------------------|--|-----------------------------|----|--|--|------------------------------|--|----------------------|--|--------------------|-----------|--|
| Course Code and Number: DMFG 203 | Number of Credits: 3 Course credit policy (105) | | | | | | | | | | | | | | |
| Course Full Title: Design for Manufacturing Course Short Title: <i>(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)</i> | | | | | | | | | | | | | | | |
| Faculty: Faculty of Applied and Technical Studies | Department (or program if no department): Digital Manufacturing | | | | | | | | | | | | | | |
| Calendar Description: Introduction to manufacturing technology. Impacts of materials and processes on industrial design choices and approaches. Process of designing or engineering a product to reduce its manufacturing cost. Manufacturability and common sense design. Manufacturing and industry standards, testing, and quality assurance. | | | | | | | | | | | | | | | |
| Prerequisites (or NONE): | Admission to the Digital Manufacturing diploma or department permission. | | | | | | | | | | | | | | |
| Corequisites (if applicable, or NONE): | NONE | | | | | | | | | | | | | | |
| Pre/corequisites (if applicable, or NONE): | NONE | | | | | | | | | | | | | | |
| Antirequisite Courses <i>(Cannot be taken for additional credit.)</i> Former course code/number: Cross-listed with: Dual-listed with: Equivalent course(s): <i>(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)</i> | Special Topics <i>(Double-click on boxes to select.)</i> This course is offered with different topics: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <i>(If yes, topic will be recorded when offered.)</i> | | | | | | | | | | | | | | |
| Typical Structure of Instructional Hours <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Lecture/seminar hours</td><td style="text-align: center;">30</td></tr> <tr><td>Tutorials/workshops</td><td></td></tr> <tr><td>Supervised laboratory hours</td><td style="text-align: center;">15</td></tr> <tr><td>Experiential (field experience, practicum, internship, etc.)</td><td></td></tr> <tr><td>Supervised online activities</td><td></td></tr> <tr><td>Other contact hours:</td><td></td></tr> <tr><td style="text-align: right;">Total hours</td><td style="text-align: center;">45</td></tr> </table> | Lecture/seminar hours | 30 | Tutorials/workshops | | Supervised laboratory hours | 15 | Experiential (field experience, practicum, internship, etc.) | | Supervised online activities | | Other contact hours: | | Total hours | 45 | Independent Study If offered as an Independent Study course, this course may be repeated for further credit: <i>(If yes, topic will be recorded.)</i> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit |
| Lecture/seminar hours | 30 | | | | | | | | | | | | | | |
| Tutorials/workshops | | | | | | | | | | | | | | | |
| Supervised laboratory hours | 15 | | | | | | | | | | | | | | |
| Experiential (field experience, practicum, internship, etc.) | | | | | | | | | | | | | | | |
| Supervised online activities | | | | | | | | | | | | | | | |
| Other contact hours: | | | | | | | | | | | | | | | |
| Total hours | 45 | | | | | | | | | | | | | | |
| | Transfer Credit Transfer credit already exists: <i>(See bctransferguide.ca.)</i> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Submit outline for (re)articulation: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <i>(If yes, fill in transfer credit form.)</i> | | | | | | | | | | | | | | |
| | Grading System <input checked="" type="checkbox"/> Letter Grades <input type="checkbox"/> Credit/No Credit | | | | | | | | | | | | | | |
| | Maximum enrolment (for information only): 20 Expected Frequency of Course Offerings: Annually <i>(Every semester, Fall only, annually, etc.)</i> | | | | | | | | | | | | | | |
| Labs to be scheduled independent of lecture hours: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes | | | | | | | | | | | | | | | |
| Department / Program Head or Director: | Date approved: October 2018 | | | | | | | | | | | | | | |
| Faculty Council approval | Date approved: November 8, 2018 | | | | | | | | | | | | | | |
| Dean/Associate VP: John English | Date approved: November 8, 2018 | | | | | | | | | | | | | | |
| Campus-Wide Consultation (CWC) | Date of posting: January 18, 2019 | | | | | | | | | | | | | | |
| Undergraduate Education Committee (UEC) approval | Date of meeting: February 1, 2019 | | | | | | | | | | | | | | |

Learning Outcomes:

Upon successful completion of this course, students will be able to:

- Assess the optimization of industrial design applications.
- Develop the skills of designing standardized parts.
- Use modular design concepts.
- Design for ease of fabrication and handling.
- Evaluate how to minimize manufacturing cost.
- Predict and fix (troubleshoot) potential problems in the design phase.
- Apply environmental considerations in the industrial design.
- Apply industry standards and quality assurance to design and manufacturing process.

Prior Learning Assessment and Recognition (PLAR)

Yes No, PLAR cannot be awarded for this course because

Typical Instructional Methods (*Guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion.*)

Lectures and Lab work with occasional guest lecture

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials (*If more space is required, download Supplemental Texts and Resource Materials form.*)

| Author (surname, initials) | Title (article, book, journal, etc.) | Current ed. | Publisher | Year |
|----------------------------|---|--------------------------|-----------|------|
| 1. | No textbook required – internal worksheets and lecture notes will be provided | <input type="checkbox"/> | | |
| 2. | | <input type="checkbox"/> | | |
| 3. | | <input type="checkbox"/> | | |
| 4. | | <input type="checkbox"/> | | |
| 5. | | <input type="checkbox"/> | | |

Required Additional Supplies and Materials (*Software, hardware, tools, specialized clothing, etc.*)**Typical Evaluation Methods and Weighting**

| | | | | | | | |
|----------------|---|--------------|-----|-------------------|---|------------|------|
| Final exam: | % | Assignments: | 50% | Field experience: | % | Portfolio: | % |
| Midterm exam: | % | Project: | % | Practicum: | % | Other: | % |
| Quizzes/tests: | % | Lab work: | 50% | Shop work: | % | Total: | 100% |

Details (if necessary):**Typical Course Content and Topics**

Unit 1: Design for manufacturability
 Unit 2: Designing the product
 Unit 3: Designing for lean and build-to-order
 Unit 4: Standardization
 Unit 5: Minimizing total cost by design
 Unit 6: Guidelines for product design
 Unit 7: Guidelines for part design
 Unit 8: Design for quality
 Unit 9: Implementing design for manufacturability
 Unit 10: Product disassembly studies
 Unit 11: Shape casting of metals
 Unit 12: Sheet metal forming
 Unit 13: Extrusion of metals
 Unit 14: Forging of metals
 Unit 15: Machining
 Unit 16: Injection molding of thermoplastics
 Unit 17: Thermoforming
 Unit 18: Resin transfer molding
 Unit 19: Additive manufacturing
 Unit 20: Joining and assembly
 Unit 21: Recycling
 Unit 22: Manufacturing process choice